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RURAL WATER SUPPLY AND SANITATION IN ZIMBABWE:

RECENT POLICY DEVELOPMENTS

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1. INTRODUCTION

On 10 November 1982, the International Drinking Water Supply and Sanitation Decade was launched in Zimbabwe, two and half years after its inauguration by the United Nations General Assembly. The national goals adopted for the Decade are very much in keeping with the emphasis which the Government of Zimbabwe has placed on rural development (Zimbabwe Government, 1982). This emphasis is reflected in the recently adopted National Master Plan for Rural Water Supply and Sanitation which aims specifically at improving domestic water supply and sanitation for rural inhabitants.

The importance of water supply and sanitation in developing countries cannot be questioned. One of the principal manifestations of the poverty which characterises many developing countries is poor health, which in turn is manifested through high infant mortality rates and comparatively shorter life expectation periods. Most of the serious killer diseases in developing countries are directly connected with poor domestic water and sanitation facilities. Such diseases are either waterborne or a result of inadequate use of water for hygiene purposes. They include typhoid, cholera, diarrhoeal and intestinal infections, and a variety of eye and skin diseases. Within developing countries, good water and sanitation (and other environmental and social) facilities tend to be concentrated in urban areas, although the neglected rural areas frequently carry more than 70 per cent of the national total population. Fortunately, the recent swing away from emphasis on urbanisation and industrial development towards emphasis on agriculture and rural development has resulted in, among other things, significant efforts in provision of rural water supply and sanitation facilities, an important basic need and indicator of health development.

There has, in recent years, been a considerable amount of literature devoted to rural water supply and sanitation in developing countries (Feachem, 1977; Feachem et. al., 1978; Cairncross et. al., 1980; Glennie, 1983). It is not intended here to review such literature, which is now commonplace and widely accessible. However, it is important to highlight the significant characteristics of rural water supply and sanitation strategies in developing countries to which most of the literature has paid attention. The first aspect is that rural water supply and sanitation has generally been taken as one dimension of primary health care. Primary health care emphasises preventive rather than curative aspects of health care delivery. Preventive measures are aimed at uprooting the causes of ill-health and they tend to be not only more effective, but also cheaper. For that reason, health care can reach many more millions of people, particularly the rural poor, and not only the rich few concentrated in urban areas who can afford sophisticated hospital and private practitioner fees. The second characteristic of rural

water supply and sanitation in developing countries is that there has been a general preference for appropriate technology. Appropriate technology is more affordable and can therefore reach greater numbers of people. It is also more sustainable, in the sense that rural communities can easily develop the capacity, both in technological and financial terms, to maintain water supply and sanitation facilities. The third characteristic, linked to the first two, is that the implementation of rural water supply and sanitation programmes has been closely tied to the issue of community or popular participation. Popular participation reduces costs, as beneficiaries contribute labour and materials, it increases the sense of responsibility and makes maintenance of facilities easier (Midgely, 1986). A correct balance between technology and community participation is fundamental to the success of any rural water supply and sanitation programme. Where such a balance has not been struck, as in the case of Tanzania where there has been a preference for piped water supplies, there have been immense problems of maintenance and general sustainability of levels of development (Boesen, 1986). The fourth characteristic of rural water supply and sanitation in developing countries, as a subject, is that - because of the primary health care, appropriate technology and community participation strategies - it has attracted people from a variety of disciplines. These include not only environmental health or civil engineers, but also epidemiologists, sociologists, social/community workers, economists and rural planners. This clearly suggests that human behavior is as important (if not more important) as physical construction, with respect to the success of rural water supply and sanitation programmes.

In the light of the undoubted importance of rural water supply and sanitation in developing countries, and of the key issues outlined above, the aims of this paper are as follows:

(i) To describe the nature and magnitude of problems associated with rural water supply and sanitation availability in rural Zimbabwe, on whose basis recent policy developments have been based;

(ii) To examine recent policy and planning developments in rural water supply and sanitation, focussing on planning goals and aims, technology options, implementation strategies, targets and costs and organisational frameworks for planning and implementation purposes;

(iii) To briefly assess the problems and prospects of rural water supply and sanitation development in Zimbabwe.

At this stage, it is important to point out that the emphasis of this paper is on policy issues, rather than on detailed empirical analysis of recent implementation progress. Most of the information and data used has been obtained from the Zimbabwe

National Master Plan for Rural Water Supply and Sanitation studies (1985) and related government policy documents. From late 1986 to early 1988, the author was involved in a study of the planning and training aspects of a water supply and sanitation project in Gutu district, Masvingo Province (Mutizwa-Mangiza 1988 [a], 1988 [b]). Many of the problems characterising rural water supply and sanitation development, particularly at the district level, which are discussed in this paper are based on observations made during the Gutu studies.

The paper is organised as follows. Section 2 describes levels of water supply and sanitation development in Zimbabwe prior to the completion of the National Master Plan in 1985. Problems arising from patterns of use of available domestic water and sanitation facilities, and associated health problems, are also briefly discussed. Thus section 2 gives an idea of the nature and magnitude of the problems which recent policy developments are attempting to address. Section 3 focusses on those recent policy and planning developments in the area of rural water supply and sanitation, paying special attention to the key dimensions outlined under aim (ii) above. Section 4 discusses the problems of rural water supply and sanitation development policy in Zimbabwe. In conclusion, section 5 briefly assesses future prospects and points out areas to which research attention must be paid as a matter of priority.

2. PROBLEMS OF RURAL WATER SUPPLY AND SANITATION

Table 1 shows the wet season pattern of usage of domestic water sources in the Communal Areas of Zimbabwe in 1985. Table 2 shows the same for the dry season. The most significant aspect of the pattern is that as high as 66.2 per cent of the rural population (59.9 in the dry season) do not use safe sources of water. They mainly use unprotected wells, rivers and unprotected springs for domestic water. Because of the prevalent absence of sanitation facilities (latrines), these sources of water are open to faecal and other types of pollution, particularly during the rainy season. As shown in the tables, the largest source of safe domestic water are boreholes, followed by protected wells, communal taps, household taps and protected springs. Given that Communal Areas carry about 56.7% of the national total population (Central Statistical Office, 1984, p. 6), the figures shown in Tables 1 and 2 present a very disturbing picture of deprivation, particularly as safe water is a very basic need. A 1984 survey revealed that there were 400 piped water supplies and some 9000 boreholes that were fully functioning in the Communal and Resettlement Areas of Zimbabwe (National Master Plan, Vol. 1, p 7). If rural health is to improve, these numbers of facilities will have to be increased massively.

Table 1

USE PATTERN OF DOMESTIC WATER SOURCES IN COMMUNAL AREAS : WET SEASON

SOURCE	PERCENTAGE OF POPULATION
(A) IMPROVED/SAFE	32.6
Boreholes	19.0
Protected Wells	7.4
Communal Taps	4.6
Household Taps	0.9
Protected Spring	0.7
(B) UNIMPROVED/UNSAFE	66.2
Unprotected Wells	41.4
Rivers	10.5
Unprotected Springs	7.0
Sand Abstraction	5.5
Dams	1.6
Other	1.5
TOTAL (A + B)	100.0

Source: National Master Plan, Vol. 1, p. 6.

Table 2

USE PATTERN OF DOMESTIC WATER SOURCES IN COMMUNAL AREAS: DRY SEASON

SOURCE	PERCENTAGE OF POPULATION
(A) IMPROVED/SAFE	38.7
Boreholes	26.2
Protected Wells	6.3
Communal Taps	4.8
Household Taps	0.8
Protected Springs	0.6
(B) UNIMPROVED/UNSAFE	59.9
Unprotected Wells	31.4
Rivers	9.2
Unprotected Springs	7.5
Sand Abstraction	8.3
Dams	3.5
Other	1.5
TOTAL (A + B)	100.0

Source: National Master Plan, Vol.1. p. 6.

Turning to sanitation, Table 3 shows the pattern of use of sanitation facilities in the Communal Areas of Zimbabwe in 1985. An alarming 82.2 per cent (approximately 4 million people) have no adequate sanitation facilities and only 14.8 per cent have adequate facilities. Of the former, a staggering 75 per ent have absolutely no sanitation facilities and use 'bush latrines'. For a 100 per cent coverage, it is estimated that some 767000 new latrines have to be constructed in the Communal Areas (National Master Plan, Vol. 1, 1985, p. 7).

Table 3

TYPES OF SANITATION FACILITIES IN COMMUNAL AREAS AND PATTERNS OF USE

TYPE OF FACILITY	PERCENTAGE OF POPULATION
(A) ADEQUATE	14.8
VIP Latrines	7.4
Unvented Latrines	7.0
Flush Toilets	0.4
(B) INADEQUATE	85.2
No Sanitation (Bush)	75.0
Unsafe Pit Latrines	7.7
Communal Latrines	2.3
TOTAL (A + B)	100.0

Source: National Master Plan, Vol. 1, p. 7.

The combination of poor water supplies and sanitation described above has resulted in a situation where diarrhoeal diseases are estimated to kill 25000 children every year, in spite of recent oral rehydration anti-diarrhoea campaigns (National Master Plan, Vol. 1, 1985, p. 10). In addition, bilharzia (or schistosomiasis) is endemic in some large parts of Zimbabwe to the north-east and east. Malaria is prevalent in areas below 600 metres above sea level, while typhoid, intestinal parasites and numerous eye and skin diseases continue to present problems. Outbreaks of diseases such as cholera and infectious hepatitis, while relatively less serious in Zimbabwe, cannot be entirely ruled out. Recent studies have highlighted a number of common hygiene problems in rural areas, namely; pollution of stored water, disposal of wastes within household courtyards, bathing and laundry in rivers, infrequent hand washing after visits to the latrine, insufficient use of soap and inadequate disposal of young children's and infants' faeces (National Master Plan, Vol. 4.2, 1985). As pointed out earlier, the combination of use of bush latrines and open wells or rivers, on the one hand, and the torrential tropical rains, on the other, leads to particularly high levels

of pollution risk during the wet season. The torrential rains, which have high surface run-off levels, wash down large amounts of waste into the open wells and rivers which constitute the largest source of domestic water supply in Communal Lands.

In addition to the health risks resulting from the current patterns of water and sanitation use described above, there is also the problem of geographical accessibility of facilities, particularly in the case of water. The drudgery of rural domestic work which characterises the lives of many women in developing countries is in part a result of long water collection trips. In Zimbabwe, the mean water collection trip, with a heavy load on the head, is estimated to be 1.4 kilometres in the wet season and 2 kilometres in the dry season (National Master Plan, Vol. 1, 1985, p. 8). In drought years it is possible for women in the more marginal areas to travel up to 5 or 6 kilometres for domestic water. Domesticated animals, especially cattle, are particularly vulnerable and thousands died during the drought years of the early 1980s.

While the Government of Zimbabwe has emphasised rural development and, within that developmental framework, has launched a number of rural water supply and sanitation programmes, the current level of provision is far from satisfying current needs. While the National Master Plan estimates that it will be necessary to spend Z$41.8 million (1985 prices) annually over the 20 year plan period, if 100 per cent coverage is to be achieved, the total annual expenditure for the financial year 1985/86 was estimated to be just about Z$25 million. In addition, most of the rural water supply and sanitation programmes were, prior to the completion of the National Master Plan, very uncoordinated.

Having outlined the nature and magnitude of rural water supply and sanitation problems in Zimbabwe, we now turn to an examination of the policies which have been recently adopted in order to resolve these problems.

3. RECENT POLICY DEVELOPMENTS

Zimbabwe is well-known in the field of rural water supply and sanitation, having made fairly significant technology contributions through the development of numerous appropriate techology water pumps (such as the Blair and Bush pumps) and the Ventilated Improved Pit Latrine (VIP) known as the Blair Latrine. These technological and other developments have been synthesised in the National Master Plan which was completed in 1985. The plan has yet to be formally adopted, although many of its recommendations and guidelines have been or are being implemented. The National Master Plan's main goal is to provide all the Communal and Resettlement Areas of Zimbabwe with safe and adequate domestic water supply and sanitation facilities by the year 2005. The total target population was estimated in 1985 to

be 4.9 million, out of a total national population of 8.4 million. The rest of the population is located in urban areas and Small and Large Scale Commercial Farming Areas. The National Master Plan provides a long-term framework for rural water supply and sanitation development within which specific programmes and projects are to be developed. The plan itself falls within the larger context of national health development policy, whose general goal is health improvement for all, predominantly through primary health care delivery (Zimbabwe Government, 1981, 1982 and 1985). The Plan covers the period 1985 to 2005. Although the Plan (an immense document running into some 18 volumes) is essentially a policy document, it outlines in detail technology alternatives, implementation strategies, maintenance strategies, costs in relation to targets and organisational issues. It is, above all, extremely rich with information and data, both technological and physical environmental, as well as socio-economic. The policies adopted in respect of the various dimensions of rural water supply and sanitation development are discussed below.

3.1 Technology

Zimbabwe has been realistic with regard to rural water supply and sanitation technology. Appropriate technology has been chosen for most of the rural areas. With respect to water supply, the adopted policy is to go for a mixture of hand-dug shallow wells and deep machine-drilled boreholes as back-up. The former category includes shallow and medium depth tubewells hand-augered using a simple manual machine known as the Vonder Rig. The preferred mixture ratio of hand-dug wells to boreholes is 2 to 1, although this will vary geographically, depending on hydrogeological conditions. Piped water supplies have been considered to be suitable only for installation at rural service centres, growth points and selected resettlement areas. Available evidence indicates that piped water supplies are not financially viable in the long term. The Ministry of Energy and Water Resources and Development's (MEWRD) water trading account was subsidized by Treasury to the tune of Z$2.8 million in the 1983/84 financial year (National Master Plan, Vol. 1, 1985, p. 12). Thus, in general, it may be said that hand-dug shallow wells will constitute the major source of domestic water in Zimbabwe's rural areas. These will be made up of both new and old up-graded wells. The latter include both family owned and communal wells which are usually unprotected and operated by bucket and windlass. The advantages of hand-dug wells over the other types of water supply facilities are as follows:

(i) They are much cheaper to install. Table 4 compares the development and maintenance per capita costs of hand-dug wells, boreholes and piped water supplies. As shown in the table, the development cost of a hand-dug well is just less than half that of a borehole and slightly under one tenth of the cost of a piped water supply scheme.

Table 4

PER CAPITA CONSTRUCTION AND MAINTENANCE COSTS OF DIFFERENT WATER TECHNOLOGIES (IN Z$, 1985 PRICES)

TECHNOLOGY TYPE	COST (Z$)
(A) CONSTRUCTION	
Piped Water Supply	160.00
Borehole	32.00
Hand-dug Protected Well	15.00
(B) MAINTENANCE	
Piped Water Supply	>5.00
Borehole	0.75
Hand-dug Protected Well	1.00

*Cost per annum
Figures compiled from National Master Plan, Vol. 1, p. 21.

(ii) In comparison to boreholes (which have a higher water yield), the average distance travelled by consumers to a hand-dug well (which has a lower yield) is less, given that the planned number of consumers per well (150 persons) is less than that for a borehole (250 persons).

(iii) Hand-dug wells are more suitable for community participation (see section 3.2) in both construction and maintenance. The smaller number of users per well is also likely to lead to the development of cohesive and manageable consumer groups, which constitute the social units for community participation. This factor is particularly critical for maintenance purposes.

(iv) Hand-dug wells can be operated by simpler hand-pumps, such as the Bucket Pump (see below).

(v) No sophisticated, expensive equipment is required to construct hand-dug wells. Well-digging skills already existing within user communities are made use of. For the shallow tubewell version, a simple hand-augering machine, the Vonder Rig, is used. This too is particularly suitable for the community participation mode of implementation.

The only disadvantage of hand-dug wells is that they are more prone to yield fluctuations, particularly during severe dry seasons or in the more arid parts of the country hence the need

for deeper boreholes as back-up.

As mentioned earlier, Zimbabwe has made some significant contributions to rural water supply and sanitation technology development and a variety of water hand pumps are available. These include the Blair, Bush, Nsimbi and Bucket pumps. One of the problems with present water projects is that all these pumps are being used in different areas in an uncoordinated fashion. The National Master Plan has recommended standardization of pump technology, the most important criteria being feasibility of community-based maintenance. Although there has been no official declaration, recent discussions with officials in the Ministry of Health, and reports of proceedings of the National Action Committee (see Section 3.5) suggest that the Bucket pump is the most preferred one for hand-dug shallow wells and tubewells of not more than 18 metres in depth and serving less than 60 people (Njuzu News, March/April 1988, p. 1). The Bucket Pump is very similar to the simple bucket and windlass mechanism, the difference being that the bucket for lifting water is narrow and has an in-out valve fitted at the bottom. The bucket slides down a narrow pvc casing into the well. The Bucket Pump is a very simple device and, of the currently available hand pumps, appears to be the most suitable for community maintenance. It hasn't got too many moving parts, so that wear and tear is minimised. It can be dismantled and assembled easily. For the deeper wells and boreholes serving more than 60 people each, the National Action Committee has recommended the Bush Pump (Njuzu News, March/April 1988, p.1). At present there are six variations of the Bush Pump and the National Action Committee has further recommended the development of a standard Bush Pump.

With respect to sanitation, the VIP latrine, also known in Zimbabwe as the Blair Latrine, has been recommended as the most appropriate. It is named after the Blair Laboratory (in Harare), which was responsible for its development, as well as the development of other appropriate technologies, including the Blair water hand pump. The Blair Latrine is odourless and fly-free. At Z$128 (1985 prices) total cost each, it is quite cheap to construct. It has an approximate life of 15 years, after which a completely new facility has to be constructed, and it costs next to nothing in terms of maintenance. There are a number of variations of the Blair Latrine which have been designed to suit different social situations. The most common type is the single-compartment latrine for use at individual homesteads. At homesteads where it is necessary for men and women to have different latrines, two single-compartment latrines or a double-compartment latrine may be used. The multi-compartment latrine version is particularly suitable for places where large numbers of people congregate, such as schools, clinics, business and service centres.

3.2 Implementation Strategies

In general terms, the major implementation strategy adopted by the Zimbabwe Government is that of community participation with government subsidies. For primary water supplies (hand-dug wells and boreholes), beneficiary communities' contribution to capital costs is through provision of their own labour for digging and building, as well as provision of locally available raw materials, namely, bricks, stones and sand. For maintenance purposes, the National Master Plan has recommended that each beneficiary household should contribute a sum of Z$1 per year, although this has not yet been implemented. There may also be some community level contributions for spares, tools, pump and headworks maintenance. However, the whole issue of community willingness to pay for water is still clouded and an in-depth study has recently been commissioned by the World Bank for the Government of Zimbabwe. Government subsidies to capital cost of primary water supply facilities will be in the form of machinery and raw materials not available locally, that is, drilling machines and hand-augers (Vonder Rigs), hand pumps, cement and pvc casing. Piped water supplies at growth points and service centres will be constructed by the Ministry of Energy and Water Resources and Development. User groups and connected individuals will have to pay for water on metered calculations. These payments are intended to completely recover operation and maintenance costs only, not capital costs.

With respect to sanitation, beneficiary households contribute labour (for digging and construction) as well as locally available raw materials, that is, bricks, sand and stones. Beneficiary household contributions were valued at Z$100 per latrine in 1985. Again, central government contributes materials which are not locally available, namely, cement, wire gauze fly screens, concrete slab reinforcement wire mesh and ventilation pipes. Central government subsidies were valued at Z$28 per Blair Latrine in 1985.

3.3 Maintenance Strategies

In line with the policy of community participation, a three-tier maintenance hierarchy for primary water supplies has been adopted. The system is also designed to fit into the three organisational levels of district councils which were created in 1984 (Mutizwa-Mangiza, 1986) and recently consolidated through the Rural District Councils Act passed at the beginning of 1988. These levels are Village, Ward and District. A village consists of approximately 100 households of 10 people each [1000 people] and a ward consists of 6 villages [6000 people] (Zimbabwe Government, 1985[a]). The representative bodies designed to be the channels for popular or community participation in development planning and implementation are, at the village level, the Village Development Committee (VIDCO) and, at the ward

level, the Ward Development Committee (WADCO). Above these is the local authority proper, the Rural District Council. Most of central government's field agencies and personnel operate from the district level. The three-tier primary water supply maintenance system is made up as follows.

(i) At the village level, Voluntary Village Pump Caretakers, who report to a Water Sub-Committee of the VIDCO, will be responsible for preventive maintenance of water facilities. This includes cleaning, routine checking and basic repairs of hand pumps.

(ii) At the ward level, paid Pump Minders employed by the District Development Fund (DDF, see Section 3.5 for organisational structures) will take charge of the more technical aspects of maintenance which cannot be handled by Voluntary Village Pump Caretakers. The Pump Minders are peripatetic, with each taking charge of about 50 water sources, including supervision of Pump Caretakers.

(iii) At the district level, Water Maintenance Units set up by the District Development Fund (DDF) agency will supervise and provide third-tier technical back-up to all district maintenance of primary water supplies.

As already pointed out, beneficiary households will be required to contribute Z$1 (1985 prices) per household towards maintenance costs, plus any locally raised contributions towards the cost of tools and spares.

With respect to piped water supplies, maintenance will ultimately be the responsibility of rural district councils (the local authorities), assisted by the DDF wherever necessary. As indicated earlier, user beneficiaries will pay, on the basis of metered calculations, for full recovery of operation and maintenance costs.

Turning to VIP latrines, maintenance is primarily the responsibility of the owner. There are little or no costs involved, as maintenance basically involves cleaning of floor and vent pipe and replacement of fly screen.

3.4 Development Targets and Costs

The National Master Plan proposes coverage of the entire Communal and Resettlement Areas by the year 2005. In respect of water, this will involve the provision of 576 new piped water supplies to 476 service centres and growth points and 100 Resettlement Areas for a combined population of about 300000, and construction of an estimated 36000 primary water sources for the remaining 8.6 million Communal and Resettlement Area people (2005 population figures). Table 5 shows the National Master Plan's water supply

targets as well as the recommended implementation schedule. These water supply targets will require a total amount of Z$699 million (1985 prices) over the 20 year plan period. This amount includes direct investment, operation, maintenance and government support/overhead costs. Out of the total of Z$699 million, Z$333 million will be for direct investment costs - Z$220 million (60%) for primary water supplies and Z$113 million (40%) for piped water supplies.

Table 5

WATER SUPPLY AND SANITATION TARGETS AND IMPLEMENTATION SCHEDULE

TARGETS	IMPLEMENTATION SCHEDULE		
	1985-1990*	1985-1995**	1985-2005***
Primary Water	6 878	15 642	35 861
Piped Water	136	224	576
Sanitation	283 000	678 000	1 400 000

* - Short Term Programme
** - Medium Term Programme
*** - Long Term Programme
Figures compiled from National Master Plan, Vol. 1, pp. 28 & 34

With respect to sanitation, 1.4 million new latrines will have to be constructed for complete coverage to be achieved by the year 2005. The National Master Plan recommends that implementation capacity be increased from an estimated 20000 latrines per year in 1985 to a peak of 80000 latrines per year in the period 1988 to 2000 and thereafter 43000 per year. The total cost of implementing the sanitation programme over the 20 year plan period is estimated to be Z$207 million (1985 prices), of which imputed value of beneficiary contributions will amount to some Z$140 million (67%), government material subsidy costs will amount to Z$39 million (19%) and government support costs will amount to Z$28 million (14%). Table 5 shows the proposed sanitation targets and recommended implementation schedule over the 20 year plan period.

The overall total cost of the proposed rural water supply and sanitation programme will be approximately Z$836 million (1985 prices). Overhead/support costs are shared between water and sanitation, hence the disaggregated costs outlined above do not add up to the estimated overall total cost of the programme. This total cost requires a very significant increase in annual expenditure, from an estimated Z$25 million during the 1985/86

financial year to a projected Z$57 million (1985 prices) in the 2004/05 financial year.

3.5 The Planning and Implementation Organisational Framework

Figure 1 illustrates the organisational structure, at the national level, for rural water supply and sanitation development. Figure 2 shows in detail the division of technical responsibilities between the various agencies involved in the implementation of rural water supply and sanitation projects. All the agencies shown in Figures 1 and 2 were already involved in water supply and sanitation implementation before the National Master Plan was prepared.

A very serious problem was, and still is to an extent, the disjointed and uncoordinated pattern of implementation, with different agencies using different approaches and technology alternatives in different areas. In addition, numerous non-governmental organisations (NGOs) were, and still are, playing a very significant role, in fact more significant (in financial terms) than that of central government. In spite of attempts at NGO coordination, through an organisation known as "Voluntary Organisations in Community Enterprise" (VOICE), the work of NGOs remains largely uncoordinated. The national structure illustrated in Figure 1 was designed with these problems in mind.

While the roles of most of the agencies involved in water supply and sanitation development do not require any further elaboration, as they are very clearly indicated in Figures 1 and 2, a few explanations are necessary with respect to the composition of some of the agencies involved, and also with respect to responsibilities over a few other functions not evident in the illustrations.

The Ministry of Local Government Rural and Urban Development (MLGRUD) has the overall responsibility for planning and coordinating rural development at the different subnational levels, that is, the province, district, ward and village. For this reason, MLGRUD chairs the National Action Committee (NAC). The NAC is the body responsible for national coordination of rural water supply and sanitation, in terms of policy and implementation activities. It consists of the following seven member agencies.

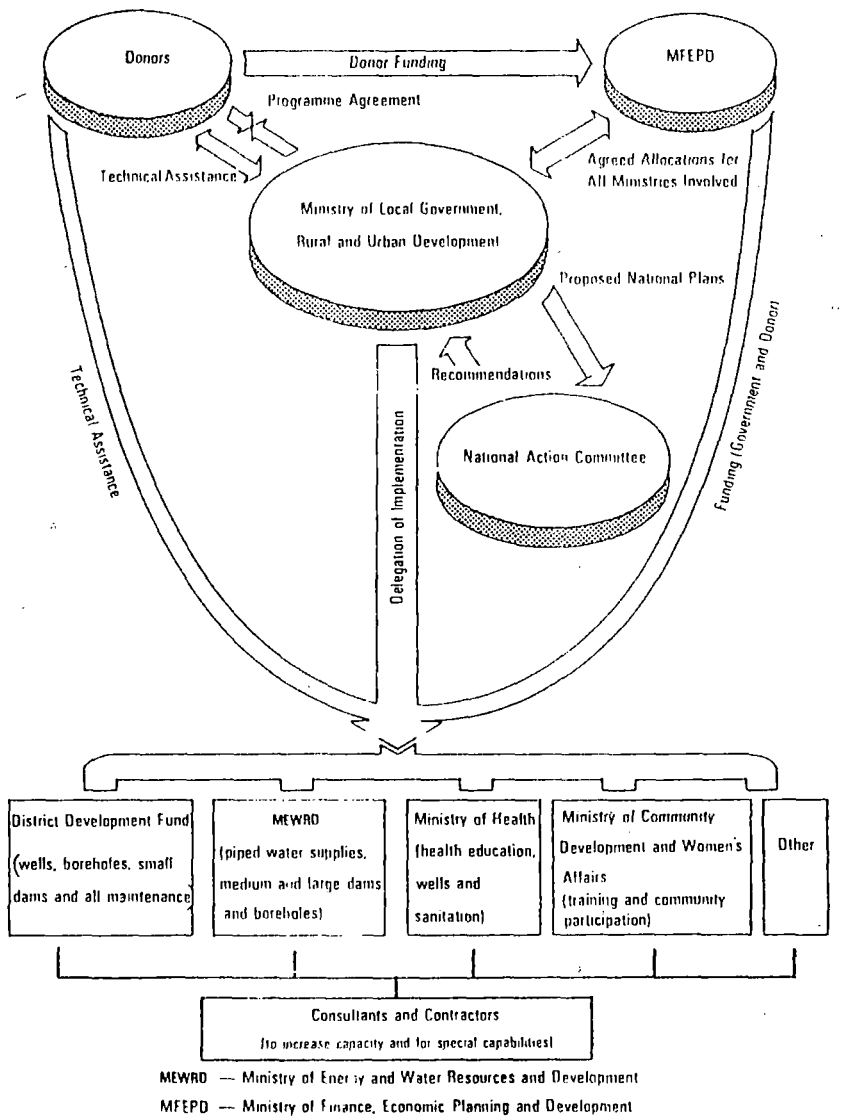
(i) Ministry of Local Government, Rural and Urban Development (Chair)

(ii) District Development Fund

(iii) Ministry of Energy and Water Resources and Development

FIGURE 1

NATIONAL ORGANISATIONAL STRUCTURE FOR THE PLANNING AND IMPLEMENTATION OF RURAL WATER SUPPLY AND SANITATION



Source : National Master Plan, Vol. 1, p. 16, 1985.

FIGURE 2

DIVISION OF TECHNICAL RESPONSIBILITIES FOR WATER SUPPLY AND SANITATION DEVELOPMENT

	Dams		Boreholes	Piped Schemes		Wells		Sanitation
Activities	Large and Medium Dams	Small Dams	Boreholes and Sand Abstraction Schemes	Large	Small	Shallow Hand Dug or Hand Augered	Deep or Requiring Blasting	Pit Latrine And Roof Catchment
Technical Planning and Design	Ministry of Energy and Water Resouces and Development	Ministry of Energy and Water Resouces and Development	Ministry of Energy and Water Resouces and Development /DDF	Ministry of Energy and Water Resouces and Development	Ministry of Energy and Water Resouces and Development	Ministry of Health/District Development Fund	District Development Fund	Ministry of Health
Construction Supervision	Ministry of Energy and Water Resouces and Development	District Development Fund	Ministry of Energy and Water Resouces and Development /DDF	Ministry of Energy and Water Resouces and Development	District Development Fund	Ministry of Health/District Development Fund**	District Development Fund	Ministry of Health
Improvements or Maintenance	Ministry of Energy and Water Resouces and Development	District Development Fund	Local Communities/ District Development Fund	DDF/ MEWRD *	MEWRD*	Local Communities/ District Development Fund		—

*Until local authorities/DDF are capable of taking over all supplies

**Responsible for support

MEWRD — Ministry of Energy and Water Resources and Development

DDF — District Development Fund

Source : National Master Plan, Vol. 1, p. 14, 1985.

(iv) Ministry of Health

(v) Ministry of Community Development, Cooperatives and Women's Affairs

(vi) Ministry of Lands, Agriculture and Rural Resettlement

(vii) Ministry of Finance, Economic Planning and Development

To assist the National Action Committee to carry out its tasks, a National Coordination Unit (NCU) has been set up within MLGRUD and its main function is to provide secretarial services to the NAC.

Another agency requiring some explanation is the District Development Fund (DDF). DDF is a semi-autonomous technical department of MLGRUD. It was established to assist local authorities in Communal Lands, mainly in the construction and maintenance of roads. In recent years, it has increasingly helped with installation of water facilities and building construction.

The Ministry of Community Development, Cooperatives and Women's Affairs (MCDCWA), while not involved in physical implementation of facilities, has been given the responsibility of motivating and mobilising village communities for the planning and implementation of water supply and sanitation facilities. Given the preferred implementation strategy of community participation, the role of MCDCWA is quite an important one. At present, most of the mobilisation work directly connected with rural water supply and sanitation is being done by the Ministry of Health through community-based Village Health Workers. In fact, the National Master Plan recommends that the Ministry of Health should assume the training function in water and sanitation programmes. However, there is currently a move to create a single cadre of Village Community Workers, incorporating the currently existing Village Health Workers, who will work under MCDCWA. It is these Village Community Workers who will be responsible for motivating and mobilising communities for the planning and implementation of water and sanitation projects.

As pointed out earlier, The National Master Plan only provides a policy framework within which more detailed planning has to take place. In line with the recommendations of the Plan, detailed planning is now taking place through Rural District Councils. Needs and ideas from villagers are channelled to the Rural District Council through VIDCOs and WADCOs. The Rural District Council combines these ideas emerging from the grassroots with its own ideas and prepares a submission to the District Development Committee (DDC). The DDC is a committee linking local government and central government's field administration and has representatives from both sides. At the same time as the above is occuring, the different central government ministries operating in the district prepare their own sectoral submissions to the

DDC, within the context of their own ministry plans. The DDC then combines the ideas coming from the Rural District Council and those coming from central government departments and produces, after rationalization, integrated district development plans. The plans are then submitted to the Rural District Council for ratification. The Rural District Council in turn submits the plans to the Provincial Council which, through its Provincial Development Committee (equivalent to the district level DDC), prepares provincial development plans for final submission to central government. At present, Rural District Councils and Provincial Councils have been concentrating on the production of five-year and annual development plans. Thus water and sanitation constitutes only one dimension, or sector, of the integrated district and provincial development plans. This whole system of subnational planning is quite new, having been introduced only in 1984, and is still in the process of implementation through a number of policy directives and legislation (Zimbabwe Government, 1984, 1985 [a], 1985 [b] and 1988; Mutizwa-Mangiza, 1986 and forthcoming).

4. CURRENT POLICY PROBLEMS

Having outlined recent developments in rural water supply and sanitation in Zimbabwe in section 3 above, we now turn in the present section to a general discussion of the problems characterising these recent policy developments. For discussion purposes, these may be divided into:

(i) The problem of the delay in formal adoption of the National Master Plan;

(ii) Financial resource problems;

(iii) Maintenance problems;

(iv) Planning and coordination problems;

(v) Community participation and training problems;

(vi) Problems to do with manpower; and

(vii) Problems of the scope of the National Master Plan.

The delay, on the part of the Zimbabwean Government, in formally adopting the National Master Plan is perhaps the most serious and immediate problem. As indicated earlier, the Plan was completed and submitted to Government in 1985. Unfortunately, Government has not yet formally adopted it, although, as pointed out earlier, the recommended planning and implementation organizational framework has already been set up. While some recent implementation programmes have been based on the recommendations of the National Master Plan, some implementation

agencies have continued to use undesirable technologies and strategies. For all the diverse water and sanitation implementation agencies to feel bound by the provisions of the National Master Plan, it is very important that the Plan be formally adopted without any further delay. In any case, this long delay, now getting close to three years, is hardly justifiable.

The main financial resource problem is simply that the programme proposed in the National Master Plan is quite ambitious, requiring an increase in annual expenditure from Z$25 million in 1985/86 to Z$57 million (1985 prices) in 2004/05. It is unlikely that the Government of Zimbabwe will be able to shoulder this burden alone. At present, it is estimated that donor agencies bear 60 per cent of all direct annual costs of rural water supply and sanitation implementation (National Master Plan, Vol. 1, 1985, p. 38). The National Master Plan recommends that the share of donor funds should be reduced to 50 per cent by 1995, 40 per cent by 2000 and 35 per cent by 2005. In spite of this, it is quite clear that a large proportion of the proposed programme will have to depend on donor funds, whose level of availability can neither be predicted nor guaranteed. This uncertainty has particularly serious implications for the provision of water supplies, where beneficiary contributions are comparatively small, that is an estimated 13 to 28 per cent, compared with more than 65 per cent for sanitation (National Master Plan, Vol. 1, 1985, p. 40). In addition, the issue of willingness to pay for water remains unclear. As has already been pointed out, the MEWRD's water trading account for piped supplies has in recent years run into deficits amounting to several millions of dollars, and rural populations in Zimbabwe have never paid for water, even in the few pilot village piped water schemes which have been implemented since independence. Given that operation and maintenance costs are expected to rise from under 33 per cent of development costs in 1985/86 to more than 50 per cent from 2002/3 onwards, the issue of willingness to pay will become increasingly critical with time.

The third problem, maintenance, is one to which a considerable amount of attention has been paid, both in theory and practice, with respect to other countries (Feachem, 1978; Glennie, 1983). The National Master Plan volume on Operation and Maintenance indicates that serious effort has also been directed to the issue of maintenance of water supplies in Zimbabwe (National Master Plan, Vol. 5, 1985). At present, an attempt is being made to introduce a National Monitoring System designed, among other things, to eventually enable an evaluation of the different technologies currently in use with respect to ease of maintenance. It has also been pointed out earlier that there appears to be a move towards technology standardization through the adoption of only two types of hand pump, the Bucket and Bush pumps. Unfortunately, most of the attention which has been paid to the question of maintenance in Zimbabwe has largely focussed

on technical issues. Both Cairncross (1980, p. 107) and Glennie (1983, p. 25) have emphasised that the most serious problems likely to be experienced in a rural water supply programme are of an organizational rather than technical nature. In the case of Zimbabwe, there is no obvious empirical evidence to support the three-tier maintenance system which has been adopted (Cleaver 1987). In fact, an earlier government report questioned the need for the middle tier (ward) of Pump Minders (Zimbabwe Government and GTZ, 1984). With respect to India, Ray (1984) has criticized the three tier maintenance system as one designed by economists and engineers who have never worked or lived in a village. Ray argues that semi-literate villagers can be successfully trained to undertake both minor and major repairs. Glennie (1983, p. 101), on the other hand, believes that consumers do not, in general, have adequate financial and technical capacity even for preventive maintenance. In the light of these divergent views, all that can be said at present with respect to Zimbabwe is that there is a need to investigate thoroughly the more socio-organizational dimension of maintenance. Is it appropriate to have men, instead of women, as chairpersons of village water committees? What motivates Voluntary Village Pump Caretakers and ordinary villagers to participate in maintenance? How do user communities react to pump breakdowns, in terms of patterns of use of alternative sources of water? To what extent does the geography of user groups coincide with the administrative boundaries of VIDCO areas - the level assumed to be the basic maintenance unit? To what extent are users willing to pay for operation and maintenance of water facilities? These are questions which have to be addressed seriously before an appropriate maintenance system is finalised. To the author's knowledge, only two studies in Zimbabwe have attempted to move in this direction, that is the World Bank sponsored study already mention and another one by Cleaver (1987).

Turning to planning and coordination, the main problem is that there is very little experience at subnational levels. As explained earlier, the National Master Plan is basically a policy framework which should be followed by more detailed planning at local levels. The responsibility for that detailed planning lies with the District Development Committees. As revealed elsewhere (Mutizwa-Mangiza, Conyers and Cormack, 1986; Mutizwa-Mangiza, forthcoming) there is little expertise in planning at the district level. In addition, planning is made particularly difficult by the multiplicity of agencies involved in rural water supply and sanitation. There are four central government ministries directly involved (MLGRUD, MEWRD, MOH, MCDWAC) and the National Master Plan (1985, Vol. 4 [3]) identifies not less than 27 different agencies as being involved in different aspects of rural water supply and sanitation - 8 central government ministries and departments and 19 non-governmental organizations (both Zimbabwe-based and international). While the National Master Plan makes some useful recommendations on coordination at the national level and on policy guidelines for NGOs, there are

no clear guidelines on planning and coordination at the district level - the level at which implementation is organized. Thus clear water and sanitation coordination and planning guidelines to both the district and provincial levels would be useful. Further, the desirability of a separate sector coordinating unit at the national level, the National Action Committee (NAC), is questionable. The structural organization and operational procedures of the new integrated subnational planning system have been fully described elsewhere (Mutizwa-Mangiza, 1986 and forthcoming; Mutizwa-Mangiza, Conyers and Cormack, 1986) and briefly in section 3.5 of this paper. Being only one of the many sectors within the new integrated and decentralized planning system, proposed local level water and sanitation activities reach the national level as part of integrated annual and five-year provincial development plans. Creating a special national coordination unit to focuss on only one section of provincial development plans would appear to have undermined one of the major advantages of the decentralized subnational planning system, that is coordinated and integrated planning. It would have been more logical to maintain inter-sectoral coordination all the way up, from the district to the national level. Elsewhehere (Mutizwa-Mangiza, forthcoming), it has been suggested that a Regional Development Planning Unit be set up within the National Planning Agency - the recently created supreme government planning body. Among the duties of the Regional Development Planning Unit would be the consideration of provincial development plans for purposes of public sector investment programme budgeting and integration with national development plans. Further, the manner in which the NAC fits into the new integrated subnational planning system is not clear. However, given that the NAC is already in place and that it appears to be working reasonably well, what now needs to be done is to decide and clarify on its organizational relationship with the emerging integrated and decentralized subnational development planning system.

With respect to community participation and training, the main problem is that there has so far not been a proper link between training and project implementation. The National Master Plan volume on Health Education (Volume 4[3]) makes only very general recommendations, yet a proper integration of community training into the implementation process would require detailed, district-focussed guidelines. These would have to take into account the stages of project implementation, the different training target groups within the community and standardization of the content of courses and training aids. Such detailed guidelines would enhance the practical effectiveness of community training and participation. In addition, the responsibilities of health education, on the one hand, and mobilization for community participation, on the other, have been split between MOH and MCDWA, respectively. As both aim at creating awareness and changing attitudes and behaviour among village communities, the district focussed guidelines suggested above would have to

clearly indicate the division of responsibilities between the two ministries.

The sixth problem, manpower, is one which has been highlighted by the National Master Plan itself (vol. 7, 1985). Manpower shortage is critical in technical areas, particularly within MEWRD. At the time the National Master Plan was produced (1985), it was estimated that 20 to 25 per cent of the senior professional posts in MEWRD were vacant, while 25 per cent of the technician level posts in the same ministry were also vacant. In addition, 20 per cent of the senior professional staff were expatriate. Most local authorities, that is Rural District Councils, have no professional technical and planning staff. They will have to depend, to a large extent, on the DDF, which itself is considered to be in need of strengthening in the area of water and sanitation. Fortunately, the impact of these shortages will be felt more in piped water schemes (which require highly trained staff) than in primary water supply and sanitation schemes (which have a large component of community participation and do not require sophisticated skills). It is these latter schemes that constitute the larger proportion of the rural water supply and sanitation programme.

The seventh and final problem is to do with the scope of the Master Plan. Recent droughts have demonstrated the vulnerability of livestock, in particuar cattle - thousands died during the 1982/3 drought. In spite of this, the National Master Plan only povides for potable domestic water. Bearing in mind the importance of cattle, as a source of wealth, among Zimbawe's peasant farmers, the National Master Plan should have been widened in scope to include the provision of water for domesticated animals. In addition, the Plan is confined to the Communal Lands and Resettlement Areas. According to the 1982 population census, Communal Lands, or areas covered by the then District Councils accounted for 56.68 per cent (4276900 people) of the total national population, while the then Rural Council areas (covering the Large Scale Commercial Farming Areas - LSCFA) accounted for 20.82 per cent (1571349 people). The latter figure includes the Resettlement Area population of 128670 (Zimbabwe Government, 1985[d], pp. 44-47). Given these population distribution figures, it is quite clear that, by focussing on Communal and Resettlement Areas alone, the National Master Plan for Rural Water Supply and Sanitation has excluded approximately 1.4 million rural dwellers, most of whom work on large scale commercial farms - a significant proportion of Zimbabwe's rural population. It can be said, without any hesitation, that farm labourers constitute the most marginal sector of the national population. Their legislation-guaranteed minimum wages are, in comparison with other sectors of the labour force, the lowest; they have no security of tenure and their residential accommodation is tied to their employment; their housing and sanitation facilities are, with few exceptions, deplorable; malnutrition among their children is rampant; and their education

and health facilities are both quantitatively and qualitatively poor. Many of them have no Communal Area roots, as they are migrant labourers or discendents of migrant labourers. Thus, unlike their colleagues of Zimbabwean discent, they have no Communal Area homes to which they can retire in old age or during periods of unemployment. In fact, a significant proportion of Zimbabwe's rural squatter population is made up of unemployed and aged former farm labourers who have nowhere to go. While farm labourers can vote during national elections, they are, in accordance with the provisions of the recently passed Rural District Councils Act (1988) disenfranchised at local government level. Zimbabwe is currently considered as Africa's 'bread basket' because of its success story of both large scale commercial and peasant agriculture, yet those people whose labour is a crucial determinant of the continued success of agriculture can be described, in every sense, as the poorest of the poor. These people have been ignored by the National Master Plan, as they have been by so many other public sector plans and strategies, so that this plan should not be considered as 'national rural', but as only a 'Communal and Resettlements Area' plan for water supply and sanitation. While central government hopes that LSCFA employers will provide the basic needs of their workers, including water and sanitation, most of these employers have so far been notoriously unconcerned with the well-being of their workforce. It is, therefore, absolutely essential that a supplement to the current National Master Plan, covering LSCFAs, be prepared. It would be desirable that this be done within the context of a general consideration of the socio-economic and political status of Zimbabwe's farm labourers. Of all the socio-economic and political inequalities inherited from the colonial period, the question of farm labourers is perhaps the most significant which remains largely unresolved. This should be done as a matter of urgency.

5. CONCLUSION

The general aim of the above discussion has been to examine recent policy developments in rural water supply and sanitation in Zimbabwe, focussing on the National Master Plan. A number of policy problems facing the rural water supply and sanitation sector have also been highlighted. While no systematic attempt has been made to offer solutions to these problems, some suggestions with respect to planning, community training and mobilisation and the scope of the National Master Plan have been made. The first suggestion made is that Government should formally adopt the National Master Plan without any further delay. The second suggestion made is that the National Master Plan for Rural Water Supply and Sanitation should be followed by detailed operational planning guidelines for the district and provincial levels. Such guidelines would be immensely useful, given the paucity of planning skills, particularly at the district level. The third suggestion made is that a 'multi-sector

coordination unit, such as a 'Regional Development Unit' of the National Planning Agency should be the highest national authority for coordinating water and sanitation activities in the context of the integrated development plans submitted from the provincial level. This would help to maintain an important advantage of the newly created subnational planning system in Zimbabwe, namely, integrated planning. As a result, the organizational relationship of the National Action Committee with the new system of integrated and decentralized planning has to be defined. The fourth suggestion which has been made is that, as in the area of planning, detailed community training guidelines should be formulated. Aimed at the district level, these should include clear allocation of training and mobilization responsibilities, training target groups, standard training aids and course plans which ensure a proper integration of training into the project implementation process. The fifth suggestion made is that a supplement to the current National Master Plan covering LSCFA labourers' homesteads and possibly making provisions for domestic animals, should be prepared. The second, fourth and fifth suggestions also constitute important and interesting areas for future applied research. Some preliminary work in the areas of operational planning and community training at the district level has already been started (Mutizwa-Mangiza, 1988[a] and 1988 [b]).

Finally, it must be emphasised that the problems discussed in this paper are balanced by some very positive aspects of recent developments in rural water supply and sanitation in Zimbabwe. The first one is that Zimbabwe is fortunate to have abundant and accessible underground water; although there are a few problem areas, particularly in the semi-arid south-western parts of the country.

The second positive aspect is the fact that Zimbabwe has chosen to go for appropriate technology, that is primary water supplies (as opposed to sophisticated piped water supplies) and Blair latrines. The prospects of achieving the goal of safe water and sanitation for all in the forseeable future and of community-based maintenance of facilities are relatively brighter.

The third positive aspect is that experience so far suggests a high level of willingness, among village communities, to participate in rural water supply and sanitation projects. In addition, villagers themselves appear to place a high development priority on domestic water and sanitation (National Master Plan, Vol. 4[2], 1985).

Thus while financial and other problems discussed in this paper may slow down the pace of implementation, the positive aspects pointed out above, combined with the framework of the National Master Plan, constitute a very solid and optimistic basis for the improvement of rural water supply and sanitation in Zimbabwe.

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